

S715

10,400

JUN/1-3-00-1-12/21

AUTHORS: Siverts, I.I., Academician of the AS UkrSSR; Dyben,  
Ye.P.; Seleznev, G.P.; Strydenckiy, V.V., Candidates  
of Technical Sciences

TITLE: Experimental Determination of the Coefficients of  
Hydraulic Resistance for Apertures in Revolving  
Discs

PERIODICAL: Inzheticheskaya tekhnika na varenii: Energetika,  
1961, No. 1, pp. 50-53 (USSR)

ABSTRACT: This is a description of a series of experiments conducted in a special apparatus (Figure 1) in the All-Union Institute of Heating and Sanitary Engineering AS UkrSSR to determine the influence of rotation on the hydraulic resistance of separate parts of the cooling system in gas turbines ~~and~~. A series of formulae is used to determine coefficients; the consumption coefficient, i.e., the ratio of the actual gas rate through the aperture to the rate with isentropic flow  $\dot{m}_s$ , is expressed by

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D 7/14/54-1-1-a/24

Experimental Determination of the Coefficients of Hydraulic Resistance for Apertures in Revolving Dams

$$\mu = \frac{G}{G_0} \quad (1)$$

The cylindrical apertures used in the first series of experiments had sharp inlet and outlet edges, constant length of 24.13 mm and the following diameters: 4; 5.3; 6.7; 8; 10; 11.5; 13.3; 14.5; 20 and 35 mm, which corresponds to a change in the relative depth  $l/d$  from 0.04 to 0.30 and embraces the whole potential range of aperture sizes for supplying cooling air to gas turbines. The formulae for determining the coefficient of inlet and outlet resistance are

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JULY 14 1964 1-12/81

Experimental Determination of the Coefficients of Hydraulic Resistance for Apertures in Revolving Dikes

$$\delta = \frac{1}{\delta_0} (1 + 0.32K_0 + 0.69K_0^2 + 0.057K_0^3 + 0.12K_0^4 - 0.043K_0^5 + 0.025K_0^6) \quad (12)$$

and

$$\delta = \frac{1}{\delta_0} (1 + 0.6K + 0.08K^2 - 0.002K^3 + 0.00002K^4) \quad (12a)$$

The parameter K characterizes change in the conditions regarding the flow of the current through apertures in the dike during rotation

$$K = 1.49 + \frac{\theta}{360} \quad (12)$$

where  $\theta$  is the angle turned by the axis of the dike.

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307/145-00-1-12/21

Experimental Determination of the Coefficients of Hydraulic Resistance for Apertures in Revolving Discs

apertures;  $c$  = mean outlet speed in the aperture.

$$K_C = M \cdot K \quad (10)$$

The authors conclude that, when the ratio of the speed of rotation to the mean outlet speed in the aperture is large ( $u/c > 1.5$  app.), the consumption coefficient for apertures with sharp inlet edges diminishes by about a dozen. When the ratio  $u/c$  is above 4 the influence of the shape of the inlet edges may be disregarded. Rounding off the outlet edges has little practical effect on conditions governing air flow through the apertures in rotating discs. The consumption coefficient for square apertures is near that for cylindrical channels given similar peripheral velocity. The relative depth of the aperture, if the ratio is between

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207/1-3-00-1-12/81

Experimental Determination of the Coefficients of Hydraulic Resistance for Apertures in Revolving Discs

$0.96 < \frac{1}{d} < 0.64$ , has no practical effect on the relationship of the consumption coefficient to rotation. With the aid of experimental data the authors established the empirical relationships of the consumption and hydraulic resistance coefficients to  $K$  and  $K'$  parameters. These are true for a disc rotating in a housing where the relative axial clearance between the disc and the housing is greater than 1.5. Much detailed information on the experiments is included. A correction slip at the end of the volume states that the readings along the axis of the ordinates in Figure 5 should be 0.2; 0.3; 0.4; 0.5; 0.6; 0.7. There are 5 graphs, 1 diagram, 1 set of a graph and a diagram and 2 Soviet references.

ASSOCIATION: Institut tehnicheskikh AN UkrSSR - Thermal Power Engineering Institute Ad Meregor

DRAFTED: September 4, 1977  
Card 5/5

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102000 2615e2115 m/s

S 021/60/000000000000  
A157/A029

11.9200

AUTHORS: Shvets', I.T.; Academician of the AS UkrSSR; Dyban, Ye.P.; Selyavkin, G.F.; Stradom's'kyy, M.V.; Rudkin, S.K.; Mel'nyk, V.P.

TITLE: Influence of Initial Disturbances on the Development of Turbulent Stream Conditions When Air Moves Through Tubes

PERIODICAL: Dopovidi Akademiyi nauk Ukrayins'koyi Radyans'koyi Sotsialisticheskoyi Respubliky, 1960, No. 2, pp. 173 - 176

TEXT: This paper presents the results of experiments studying the nature of velocity pulsations in a tube with various rates of artificially-created turbulences of the air stream and their effect on the hydraulic resistance. The following conclusions were drawn: allowances should be made for the initial turbulences of stream when calculating heat transfer and hydraulic resistance for a fluid moving through relatively short tubes. Effects of artificial turbulences are particularly great at the transition stage. Initial disturbances die away within relatively short length of tubes, these lengths being dependent on the magnitude of initial turbulence and the Reynolds number. Initial disturbances do effect the value of the coefficient of hydraulic resistance within the range

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P4164

S.021/60, CCCP/006/016  
A159/A029

Influence of Initial Disturbances on the Development of Turbulent Stream Conditions When Air Moves Through Tubes

of Reynolds numbers from 2,000 - 5,000; at higher values thereof their effect on the stream passing through a tube (having a length of 40 diameters) is within the limits of the measurement error. The experimental stand included a 4,000 mm long round tube having a 51 mm inner diameter. Initial disturbances were created with the help of perforated disks of 3 - 5 and 10 mm in diameter, installed in the intake tube section. Pulsations were measured and recorded by an ETA-5A (ETA-5A) electric thermoanemometer, at Reynolds numbers from 100 to 10,000. Figure 1 shows oscillograms giving the dependence of velocity pulsations in the intake area on the Reynolds numbers (disk with 3 mm perforations, coefficient of clogging  $\beta = 0.18$ ). Figure 2 gives the range of critical Reynolds numbers, Figure 3 shows the dependence of the relative axial pulsation on the coefficient of clogging. Figure 4 shows how the average relative velocity pulsations change along the length of a tube with a 10 mm perforated disk. There are 4 figures.

ASSOCIATION: Instytut teploenergetyky AN UkrSSR (Institute of Heat Power Engineering of the AS UkrSSR)

SUBMITTED. October 1, 1959

Card 2/2

83237

S/143/60/000/008/004/00,  
A189/A029

10.2000

AUTHORS: Shvets, I. T., Academician of the AS UkrSSR; Dyban, Ye. P.; Selyavin, G. F.; Stradomskiy, M. V.; Candidates of Technical Sciences

TITLE: Experimental Investigation of the Influence of Initial Perturbations Upon the Development of the Turbulent-Flow Condition

PERIODICAL: Energetika, 1960, Vol. 3, No. 8, pp. 102-109.

TEXT: The paper presents the results of the investigation, carried out in 1958-1959, on the influence of initial perturbations upon the development of axial velocity pulsations in an isothermal flow and on their influence upon the value of the hydraulic resistance coefficient in short tubes. The tests were carried out in a drawn tube, 50 mm in diameter, 80 diameters long, linked through a system of dampers to a compressed air main. The axial velocity pulsations were measured by the 3TA 5A (ETA-5A) apparatus designed by the VEI im. V. I. Lenina (All-Union Institute of Power Engineering imeni V. I. Lenin). The tests indicated that the level of initial perturbances influences the development intensity of the

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S/43/60/000/008/004/005  
A109/A029

Experimental Investigation of the Influence of Initial Perturbations Upon  
the Development of the Turbulent-Flow Condition

turbulent flow. The higher the initial level in tubes shorter than 80 diameters, the sooner the laminar flow ends and the hydrodynamic stabilization of the flow ensues. A substantial influence of the level of initial perturbances upon the value of the hydraulic resistance coefficient was found for Reynolds numbers from 1,800 to 5,000. This influence was within the measurement errors for higher Reynolds numbers in tubes longer than 80 diameters. There are 3 sets of oscillograms, 3 graphs and 2 Soviet references.

ASSOCIATION: Kiyevskiy universitet imeni T. G. Shevchenko Institut teplot-

energetiki AN UkrSSR (Kiyev University imeni T. G. Shevchenko  
Institute of Heat Engineering of the AS UkrSSR)

SUBMITTED: March 18, 1960

Card 2/2

S/262-62-000001-014 000  
100-1252

AUTHORS Shvets, I. I., Diban, Yu. P., Stradomskiy, M. V., and Selvakov, G. I.

TITLE Determination of discharge coefficients for rotating channels

PERIODICAL Referativnyy zhurnal, otdelnyy vypusk 42 Silovyye ustroystva, no. 11, 1962, 9 abstract  
42-1, 187 (7b prints, Inst. teplotermod. AS UkrSSR, no. 18, 1960, 17-27 (Ukrainian))

TEXT Test results on discharge coefficients and hydraulic resistance of rotating channels are reported. It is shown that under gas flow conditions these parameters are closely dependent on the ratio of the peripheral velocity of the channel center to the average velocity of the gas stream through the channel. Empirical formulas are given for above parameters which may be used for designing the cooling system of gas turbine blade disks and determining axial stresses in impulse turbines.

Abstracter's note: Complete translation.]

Card 1 of 1

SHVETS, I.T. [Shvets', I.T.]; DYBAN, Ye.P. [Dyban, E.P.]; SELYAVIN, G.F.  
[Seliavin, H.F.]; STRADOMSKIY, M.V. [Stradoms'kyi, M.V.]; RUDIN,  
S.K.; MEL'NIK, V.P. [Mel'nyk, V.P.]

Effect of initial disturbances on the development of turbulent flow  
of air through pipes. Zbir. prats' Inst. tepl. AN URSR no. 20:3-15  
'60. (MIRA 14:4)

(Pipe--Fluid dynamics)

CHALCHIKOV, V. V., CHIK, K. VA., LEVETI, I. G. and TIRAM, I.P. P.

"Experimental study of the effect of stream turbulence on heat-exchange in motion of air through tubes."

Report presented at the 1st All-Union Conference on Heat- and Mass - Exchange,  
Minsk, BYUR, 6-9 June 1971

DYBAN, Ye.P.; RUDKIN, S.K.; STRADOMSKIY, M.V.; SHVETS, I.T.; EPIK, E.Ya.

Investigation of the radial component of velocity pulsations in a  
turbulent air flow in relatively short tubes with different levels  
of initial perturbation. Inzh.-fiz. zhur. 4 no.11:3-9 N '61.  
(MIRA 14:10)

1. Institut teploenergetiki AN USSR, g. Kiyev.  
(Aerodynamics)

S/021/61/000/005/012/012  
D215/B304

AUTHORS: Shvets', I.T., Member of AS UkrSSR, Dyban, Ye.P.,  
Stradom's'kyy, M.V., Rudkin, S.K., and Epik, E.Ya.

TITLE: Investigating radial components of velocity pulsation  
during the motion of air in short pipes

PERIODICAL: Akademiya nauk Ukrayins'koyi RSR. Dopovidi, no. 5,  
1961, 644 - 648

TEXT: The ratio of these pulsations to mean velocity is usually  
considered as degree of turbulence (the so-called Karman number)  
where  $\sqrt{\langle w'_r^2 \rangle}$  is the mean square value of the radial component of  
velocity pulsation,  $w_0$  the mean velocity of streaming, with re-  
spect to the cross section of the pipe. The experiments were made on  
a seamless, hydraulically smooth pipe with inner diameter of 51 and ✓  
length of 4000 mm. To increase initial disturbances, special tur-  
bulizers were put before the pipe, in the form of perforated pla-

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Investigating radial components ...

S/021/61/000/005/012/012  
D215/D304

$$K_{r_{ser}} = \frac{210}{Re^{0.5}} \quad (2)$$

( $K_{r_{ser}}$  is the mean value of  $K_r$  with respect to cross section of the pipe). The absolute value of the radial component of pulsation is

$$\sqrt{w_r^2} = 6,45 \cdot 10^{-4} Re^{0.5}. \quad (3)$$

The attempt to find an empirical formula for the radial component of pulsation with respect to the length of stabilization zone has failed. The authors find that the determination of the radial component of pulsation alone is insufficient for the characterization of the stream in the initial zone of the pipe. There are 3 figures.

ASSOCIATION: Instytut teploenergetyky AN URSR (Institute of Heat-power Engineering, AS UkrSSR)

SUBMITTED: February 1, 1960

Card 3/3

26.5200

25350  
S/021/61/000/007/008/011  
D205/D306

AUTHORS: Shvets', I.T., Member AS UkrSSR, Dyban, E.P.,  
Stradoms'kyj, M.V., Rudkin, S.K., and Epik, E.Ya.

TITLE: Effect of the level of initial disturbances on the  
heat exchange intensity during turbulent air flow in  
short pipes

PERIODICAL: Akademiya nauk Ukrayins'koyi RSR, Dopovidi, no. 7,  
1961, 920 - 923

TEXT: In calculations involving short heat exchange surfaces it is  
essential to take into account the effect of the air stream initial  
turbulence on the value of heat exchange coefficients. The authors  
studied the effects of pipe lengths, stream conditions and that of  
initial disturbances level on heat exchange intensity in pipes less  
than 80 diameters long [Abstractor's note: This expression probably  
means the ratio: length/diameter]. The lower pipe partition was  
heated to 150°C by electricity. The temperature was measured by  
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S/021/61/000/007/008/011  
D205/D306

Effect of the level ...

the length of which is inversely proportional to Re values (Fig.1). This leads to corresponding changes in the local Nusselt's numbers. By graphs illustrating the changes of the coefficient  $E_e$  along the pipe length, the local Nu numbers as well as the average ones' can be calculated (as long as parameters on the tube entrance are constant). When artificial turbulence devices are used the air flow characteristics change, but the zone of initial artificial perturbations does not exceed 30 diameters of the pipe length, even for the most effective turbulizer. As a result of increased local heat exchange coefficient in the first pipe partition, their average values are increased along a large stretch of pipe length and are inversely proportional to Reynolds numbers; so the average increase of Nusselt's number with the most effective turbulizer (one opening 10 mm in diameter,  $\beta = 0.038$ ) was observed on the pipe length equalling about 600 diameters when  $Re$  was equal to  $5 \cdot 10^4$ , but on a length of 75 diameters only when  $Re = 1.5 \cdot 10^6$ . It follows that for evaluation of heat exchange data in the entrance part of a pipe heated by an air flow with natural as well as artificial turbulence it is necessary to make a correction on the pipe length:  $E_e =$

X

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2536

S/021/61/000/007/C08/011  
D205/D306

Effect of the level ...

Nu/Nu<sub>p</sub>. There are 3 figures and 3 references: 2 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION\* Institut teploenergetiki AN UkrSSR (Institute of Thermo-energetics AS UkrSSR)

SUBMITTED: February 1, 1961

Card 4/5

L 26476-66 EWF(m)/EWT(l)/EWA(d)/EWA(l) GS  
ACC NR: AT6008139

UR/0000/65/000/0000/0007/0017

AUTHOR: Dyban, Ye.P. (Candidate of technical sciences); Prokopov, V.G.; Stradomskiy,  
M.V.; Shvets, I.L. (Academician AN UkrSSR)

ORG: None;

TITLE: Problems of hydraulic resistance of air flow through porous media

SOURCE: AN UkrSSR. Tchekniya zhidkostey i gazov (Flows of liquids and gases). Kiev,  
Naukova dumka, 1965, 7-17

TOPIC TAGS: porous metal, gas flow, hydraulic resistance, differential equation,  
porosity, gas viscosity, flow meter, metal powder, Reynolds number / RS-100 flow meter

ABSTRACT: This work is an experimental investigation of the air flow through porous media. The study is aimed at the determination of flow and hydraulic resistance coefficients, and their dependence upon the state of flow and the geometrical characteristics of the porous structure. A theory of similitude approach, considering the two basic physical factors, - viscosity and inertia - leads to the differential equation

$$\frac{dp}{dl} = \alpha \mu \cdot v + \beta \rho \cdot v^2 \quad (1)$$

suitable transformations and integration of (1) over the porous sample thickness gives:

$$y = \alpha \cdot \mu \cdot l + \beta \cdot G_f \cdot g \quad (2)$$

where  $\mu, \rho$  - dynamic viscosity & density  
of the gas and:

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ACC NR: ATo008139

$$\gamma = \gamma_{av} \cdot p / (L \cdot G_f)$$

(3). In the above expressions:  $p = p_1 - p_2$  - pressure fall across sample;  $\gamma_{av}$  - average specific density of gas;  $g$  - gravity constant;

$G_f = \gamma \cdot v$  - filtration weight flow;  $v$  - velocity of gas;  $\alpha, \beta$ , - coefficients of viscosity and of inertia. The experimental apparatus consisted of a clean and dry regulated air supply with provisions for temperature, pressure and flow measurement. Low rates of gas flow were measured by two CKF-6 gas meters, and a rheometer in series; high rates - by double diaphragms and a RS-100 flow meter. Experimental samples were disks of steel powder, 5 mm thick and 50 mm dia. with porosities of 20.5, 37, 42.5 & 55.75%. All samples had particles of the same shape and granulemetric distribution. The experiments confirmed the theoretical expressions. For the experimental coefficients  $\alpha$  &  $\beta$  the following expressions were derived as functions of the porosity  $P$ :

$$\alpha = 7.22 P^{-3.81 \cdot 10^{17}} \text{ (m}^{-2}) \quad (4) \quad \beta = 1.26 P^{6.35 \cdot 10^{13}} \text{ (m}^{-1}) \quad (5)$$

The porous medium friction coefficient,  $\lambda$ , is shown to be representable by

$$\lambda = 2 - 2/Re \quad (6) \quad \text{where Re is the Reynold's number.}$$

Directions for further research are recommended. Orig. art. has: 5 figures, 12 formulas.

SUB CODE: 20,11/ SUBM DATE: 15May64 / ORIG REP: 001 / OTH REP: 002

Card 2/2

DYKAN, Yu.P., kand. tehn. nauk; STRADOMIY, M.V., kand. tehn. nauk;  
SUTIG, I.T., skademik; KNABE, A.G., inzh.; POVOLOTSKIY, L.V.,  
inzh.; SHPET, N.G., inzh.

Study of the cooling system of a seamlessly forged drum rotor of an  
experimental gas turbine. Teploenergetika 12 no. 5:26-31 My '65.  
(MIRA 18:5)

1. Institut tekhnicheskoy teplofiziki AN UkrSSR i Khar'kovskiy  
turbinnyy zavod imeni S.M.Kirova. 2. AN UkrSSR (forShvets).

L 3464-66 EWT(m)/EXP(v)/EAT(f)/EWA(d)/EXP(v)/T-2/EXP(t)/EXP(k)/EXP(z)/EXP(b)/  
ETC(m) EM/MJW/JD/JW  
ACCESSION NR: AP5024137

UR/0096/65/000/010/0047/0051  
621.438.542.46.001.5

79

73

B

AUTHOR: Dyban, Ye. P. (Candidate of technical sciences); Stradomskiy, M. V.; Khavin, V. Yu.; Shvets, I. T. (Academician All UkrSSR); Kurosh, V. D. (Engineer)

TITLE: Experimental investigation of the GT-6-750 turbine cooling system

SOURCE: Teploenergetika, no. 10, 1965, 47-51

TOPIC TAGS: turbine design, hydraulics, turbine cooling, thermodynamics/  
GT-6-750 turbine

ABSTRACT: The newly developed cooling system for the rotor of a GT-6-750 high pressure turbine was investigated. Six tests were made on the temperature state of the rotor and 11 on the hydraulic characteristics of the cooling system. Cooling system efficiency was evaluated from measurements of metal temperature and cooling air pressure under steady state cooling conditions. Results of the measurements shown graphically, demonstrate that, with an overall consumption of cooling air of 0.86 kg/sec. and an initial gas temperature of 750C, there is assured a maximum temperature level not higher than 410C over the disc plates. This is substantially lower (by 100-110C) than the permissible value for heat resistant perlitic steel type EI-415. With this system, the main body of heat is

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1. Jh64-66  
ACCESSION NR: AP5024137

removed from the upper part of the disc plate. Thus, heating up of the main body of the rotor proceeds very rapidly and steady state conditions are attained within 45-50 min after startup. The radial and axial temperature gradients are within permissible limits. In general, the highest temperature gradients over the thickness of a disc amount to 110C and are attained after 40 minutes from the start of heating. Orig. art. has: 5 figures

ASSOCIATION: Institut tekhnicheskoy teplofiziki AN UkrSSR (Institute of Industrial Thermophysics, AN UkrSSR); Ural'skiy turbomotornyy zavod (Ural Turbine Motor Plant)

SUBMITTED: 00

ENCL: 00

SUB CODE: PR

NR REF SOV: 000

OTHER: 000

Card2/2 bP

L 21650-66 EWT(d)/EWT(m)/EWP(w)/EWP(f)/EPP(n)-2/EWP(v)/T-2/EWP(k)/ETC(m)-6 W/RM  
ACC NR: AP60006138 SOURCE CODE: UR/0114/65/00/010/0022/0025

AUTHORS: Shvarts, I. I. (Academician AN UkrSSR); Dyban, Ye. P. (Candidate of technical sciences); Stradomskiy, M. V. (Candidate of technical sciences); Ousak, Ya. M. (Engineer); Zatkovetskiy, O. N.; Klimenko, V. M.; Nasibullina, A. A.; Chepaskina, S. M.

ORG: none

TITLE: Development and investigation of the air cooling system for the high-pressure turbine rotor of GT-6-750 TMZ

SOURCE: Energomashinostroyeniye, no. 10, 1965, 22-25

TOPIC TAGS: turbine, turbine cooling, gas turbine, blade cooling/ GT-6-750 gas turbine

ABSTRACT: In conjunction with the development of gas turbine GT-6-750 (initial gas temperature 750°C, pressure 5.8 kg/cm<sup>2</sup>), several air cooling systems for the high-pressure turbine rotor were designed and tested at the Ural Turbine Factory and Institute of Heat Physics of the AN UkrSSR (Ural'skiy turbomotornyy zavod I. Institute tekhnicheskoy teplofiziki AN UkrSSR). The development of the final

UDC: 621.438:62-71.001.5

Cord 1/4

L 21650-66

ACC NR: AP6006138

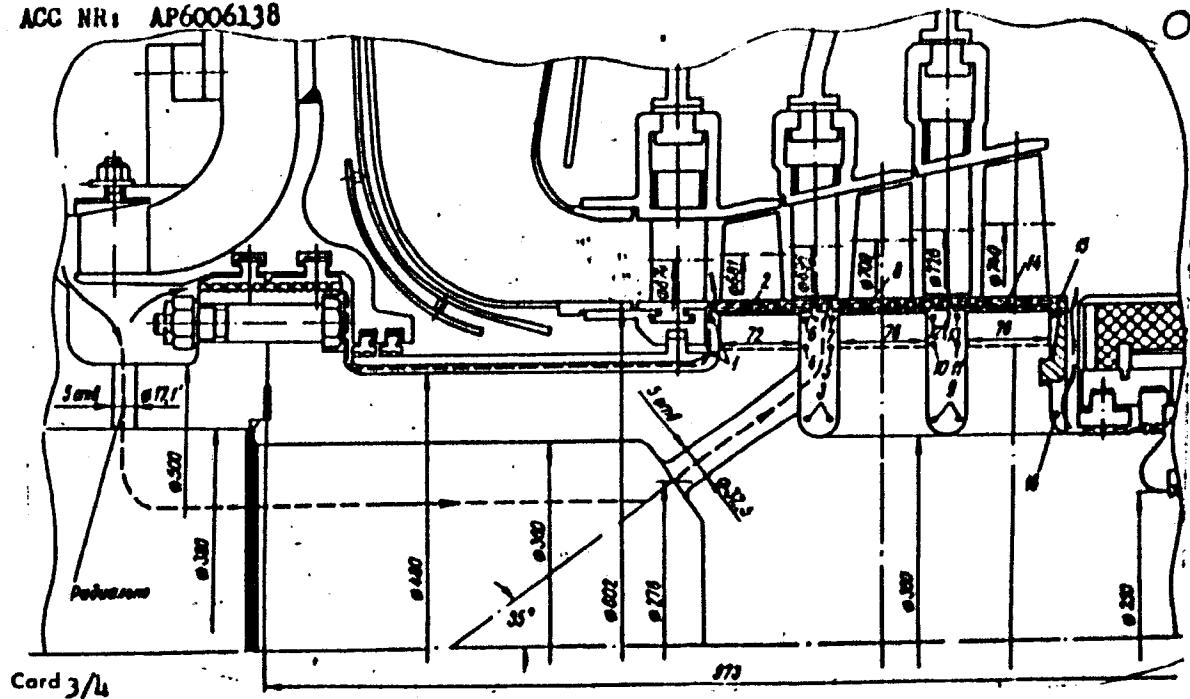
cooling system shown in Fig. 1 is discussed and the temperature distributions at the blade roots and in the turbine wheel are graphically presented for cooling air flows of 0.9 and 0.73 kg/sec respectively (0.73 kg/sec represents 1.7% of the total gas flow). The values of local cooling air pressure, temperature, flow rate, and heat transfer coefficient at the 16 locations in Fig. 1 are tabulated. It was found that the cooling system maintained all metal temperatures below 410°C (at 0.73 kg/sec) and calculations show that the cooling flow can be further reduced to 0.4--0.45 kg/sec without dangerous temperatures. With such a cooling system, perlitic steels can be used with gas temperatures of up to 900°C. The experiments confirmed the accuracy of previously proposed methods for calculating the cooling system parameters (Ye. P. Dyban, Issledovaniye sistemy vodushhnogo okhlascheniya rotorov gasovykh turbin. Avtoreferat dissertatsii. LPI im. M. I. Kalinina, 1964).

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"APPROVED FOR RELEASE: 08/26/2000

CIA-RDP86-00513R001653420009-1

L 21650-66  
ACC NR: AP6006138



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L 21650-66

ACC NR: AP6006138

Fig. 1. Cooling system for  
GT-6-750 gas turbine rotor.

Orig. art. has: 1 table and 4 figures.

SUB CODE: 21, 13/ SUBM DATE: none/ ORIG REF: 003

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LJC

L 32077-66 EWT(1)/EWT(m)/EWT(v)/T-1/EWP(t)/STI/EWP-1  
ACC NR: AP6013387 (A,N) SOURCE CODE: ER/0006/66/00/0019/001.

AUTHOR: Dyban, Ye. P. (Candidate of technical sciences); Stradomakiv,  
M. V. (Candidate of technical sciences); Klimenko, V. N. (Candidate of  
technical sciences); Bileko, B. D. (Engineer); Piruyeva, L. V.  
(Engineer)

ORG: Industrial Electric Generation Institute of the AN UkrSSR  
(Institut tekhnicheskoy toplofikateli AN UkrSSR-KTZ)

TITLE: Investigation of a system for cooling the rotor of a high  
pressure head-type gas turbine installation Model 4-750

SOURCE: Teploenergetika, no. 5, 1966, 19-24

TOPIC TAGS: gas turbine engine, combustion gas dynamics, engine  
cooling system, turbine compressor, turbine blade, last-stage cooling, alloy steel /  
Model 4-750 gas turbine engine, ET-612X alloy steel, FI-4/V alloy steel

ABSTRACT: The 4-750 gas turbine installation is of the slotted shaft  
type and is designed for electric trains; at an initial gas temperature  
of 750°C it has a useful power of 4,000 kilowatts. The experiments  
described in the present article were carried out on a turbo-compressor  
block with simulation of the low pressure section by a special  
throttling unit. The article shows a diagram of the experimental

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UDC: 621.438.542.46.001.5

L 32077-66

ACC NR: AP6013387

apparatus. Cooling of the rotor was done with air at an initial temperature of 200°C. The turbine blades and the rotor disks were made of heat resisting alloys of the austenitic class, the blades of alloy EI-765, and the disks of alloy EI-612K.<sup>14</sup> The temperatures of the metal, the gas, and the air were measured with Chromel-Alumel thermocouples. Experimental data on the temperature fields in the rotor disks are shown in a series of curves. The scheme tested made possible a maximum disk temperature of 500°C, which allows use of a heat resisting steel of the perlite type--alloy EI-415.<sup>15</sup> The consumption of cooling air was 0.82 kg/sec but its distribution over the stages required considerable temperature drops over the thickness of the disks. Orig. art. has: 6 figures and 1 table.

SUB CODE: 21// SUBM DATE: none/ ORIG REF: 004

Cord 2/2 PLG

L 04270-67

ACC NR: AP6013298

SOURCE CODE: UR/0413/66/000/008/0091/0091

AUTHORS: Dyban, Ye. P.; Klimenko, V. N.; Budkin, S. K.; Stradomskiy, M. V.;  
Khavin, V. Yu.; Shvets, I. T.65  
B

ORG: none

TITLE: Apparatus for measuring the temperature of revolving machine details.  
Class 42, No. 180833 [announced by Institute of Technical Thermophysics, AN UkrSSR  
(Institut tekhnicheskoy teplofiziki AN UkrSSR)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 6, 1966, 91

TOPIC TAGS: temperature measurement, thermocouple, electromagnet, magnetic circuit,  
MEASURING INSTRUMENT, MECHEMICHESKIE SISTEMY

ABSTRACT: This Author Certificate presents an apparatus for measuring the temperature of revolving machine details. The apparatus contains thermocouples fixed on the revolving detail and connected into the chain of movable electromagnets of the induction-type contactless current receivers. The fixed magnets of the latter are connected into a circuit for amplifying and registration of the measured impulses (see Fig. 1). To diminish the influence of the machine shaft displacement and the interference of the nearby electromagnets, the magnetic connections of the fixed magnets are provided with magnetic screens placed on both sides of the connections in parallel to the rotation axis. The shaft carries a spline-like

UDC: 536.532.621-25

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ACC NR: AP6013298

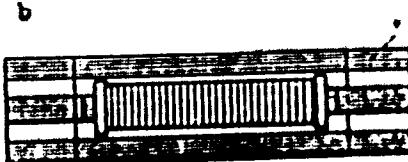
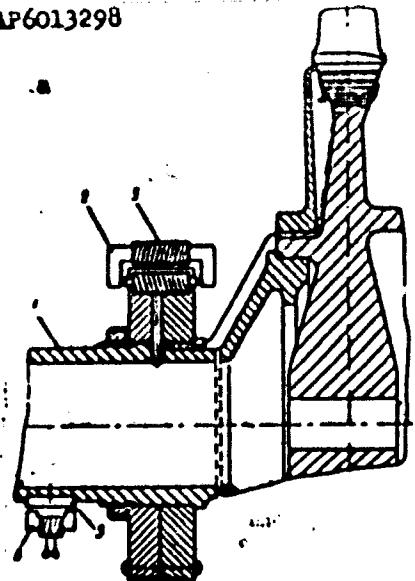


Fig. 1. 1 - machine shaft; 2 - magnetic connection; 3 - fixed electromagnets; 4 - magnetic screen; 5 - spline-like protrusion; 6 - auxiliary magnet

protrusion which, together with an auxiliary magnet, forms a system producing the directing impulses sent to the recording circuit. Orig. art. has: 1 figure.

SUB CODE: 13/ SUBM DATE: 08Feb65

Card 2/2 fv

"APPROVED FOR RELEASE: 08/26/2000

CIA-RDP86-00513R001653420009-1

STRADOMUKH, V.E.

APPROVED FOR RELEASE: 08/26/2000

CIA-RDP86-00513R001653420009-1"

30V/120-59-1-35/50

AUTHOR: Stratenstiy, V. B.

TITLE: A Modification of the Charging Device of a Pocket Dosimeter  
(Peredielka zaryadnoj ustroystva karkassnoj dozimetra)

PUBLICATION: Fizika i tekhnika eksperimenta, 1959, Nr 1, p 154 (USSR)

ABSTRACT: The pocket dosimeter DK-0.2 is supplied by the charging device ZD-3, which in turn is supplied by dry batteries. However, in the laboratory it is more convenient to charge the dosimeter from the a.c. mains for which purpose the charging device must be slightly modified. This is shown in Fig 1, in which the existing scheme is supplemented by the circuit on the RHS of the vertical line AB. Instead of batteries a half-wave selenium rectifier is used, followed by two electrolytic capacitors C1 and C2 as shown. A pilot lamp is included in the supply by the stepdown transformer as shown. There is 1 figure.

ASSOCIATION: Gidrokhimicheskiy institut AN SSSR (Hydrochemical Institute, Academy of Sciences, USSR)

SUBMITTED: February 3, 1958.

Card 1/1

STRADOMSKIY, V.B.

Some data on the radioactivity of the water of the Don River.  
Gidrokhim.mat. 34:67-71 '61. (MIRA 15:2)

1. Gidrokhimicheskiy institut AN SSSR, Novocherkassk.  
(Don River--Radioactive substances)

STRADOMSKIY, V.B.

Discharge of radioactive substances by the Don River into the Sea  
of Azov (1959). Gidrokhim.mat. 34:72-76 '61. (MIRA 15:2)

1. Gidrokhimicheskiy institut AN SSSR, Novocherkassk.  
(Don River--Radioactive substances)

STRADOMSKIY, V.N.; BUSLER, I.V.

Small-base apparatus for measuring weakly active  $\gamma$ -radiation.  
Gidrokhim. mat. 35:177-182 '63. (MIRA 16:7)

1. Gidrokhimicheskiy institut, Novocherkassk.  
(Water--Radioactive properties)

STRADOMSKIY, Ye.A.

Yak raising; animal hysbandry in mountainous regions of our  
country. Priroda 52 no.2:101-103 '63. (MIRA 16:2)

1. Institut geografii AN SSSR, Moskva.  
(Soviet Central Asia—Yaks)

FABRIKANT, Poljot (Kazan), and others; VNIPI EKhD, Tver' (self-same).  
Institute.

Study of a network for the simultaneous stoppage of the motors  
of a multi-phase d.c. drive. Izv. vys. ucheb. zav.;  
elektronika i radioelektronika 1962 (MIREI 1962)

1. Ivanovskiy energeticheskiy institut (for Fabrikant).  
2. Yaroslavskiy elektron. inzhenernyy zavod (for Tver').

KOSMIDER, Stanislaw; GRABSKI, Jozef; STRADOWSKI, Jan

Plasma sodium, calcium and potassium levels in rabbits during  
experimental acute lead poisoning. Arch. Immun. ther. exp. 11  
no.1/2-303-306 '63.

1. II Clinic of Internal Diseases, Silesian School of Medicine,  
Zabrze.

(LEAD POISONING) (CALCIUM) (POTASSIUM)  
(SODIUM) (BLOOD CHEMICAL ANALYSIS)

STRADS, L. N.

AID P - 821

Subject : USSR/Chemistry

Card 1/1 Pub. 78 - 6/26

Authors : Khangil'din, G. N., Skomorovskaya, N. I. and Strads, L. N.

Title : Non-alkaline mud fluids for drilling under complicated conditions

Periodical : Neft. khoz., v. 32, #9, 19-24, S 1954

Abstract : The effect of electrolytes on the stability of non-alkaline clay solutions is discussed, particularly in the cases of drilling through various sulfatic and carbonaceous rocks and strata with water. The significance of the surface acting colloids, semi-colloids, anti-foaming additive "NChK" and oxidized petrolatum in oil is outlined. 2 tables, 4 charts and 7 Russian references (1935-1952).

Institution: None

Submitted : No date

STRADYN', P.I.[Stradiņš, Pauls], akademik[deceased]; GERKE, I., akad., red.; RUDZIT, K.K.[Rudzīts, K.], prof., red.; KRĀTERGA, V., kand. med. nauk, red.; EZERIETIS, E.I.[Ezerietis, E.], doktor med. nauk, red.; UTKIN, V.V., kand. med. nauk, red.; STRADYN', Ya.P.[Stradiņš, J.], kand. khim. nauk, red.;

[Selected works] Izbrannye trudy. Riga, Izd-vo AN Latvijskoj SSR. Vol.1.[Lesions of the peripheral nerves and trophic ulcers] Povrezhdeniya perifericheskikh nervov i troficheskie iazyvy. 1963. 368 p. (MIRA 17:2)

1. Akademiya nauk Latviyskoy SSR (for Gerke). 2. Deystvitel'nyy chlen AN Latviyskoy SSR (for Stradyn').



"APPROVED FOR RELEASE: 08/26/2000

CIA-RDP86-00513R001653420009-1

APPROVED FOR RELEASE: 08/26/2000

CIA-RDP86-00513R001653420009-1"

STRADYMOV, F.Ya., kand. tekhn. nauk.

Rigidity of basic supports in D-54 engines. Trakt. i sel'khozmash.  
no.11:12-14 N '59. (MIRA 13:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut mekhanizatsii  
sel'skogo khozyaystva. (VIM)  
(Diesel engines)

STRADYMOV, F.Ya., kand. tekhn. nauk.

Initial gapings and relative displacements of crankshaft bearings.  
Mekh. i elek. sets. sel'khoz. 17 no.1:20-23 '59. (MIRA 12:1)

1.Gosudarstvennyy soyuznyy nauchno-issledovatel'skiy tekhnologicheskiy institut remonta i eksploatatsii traktorov i sel'-khozyaystvennykh mashin.  
(Bearings (Machinery)) (Crank and crankshafts)

ARTIM'YEV, Yu.N., kand. tekhn. nauk; ASTVATIGATUROV, G.G., inzh.;  
BABAANOV, V.Ye., inzh.; BAGYKOV, S.A., inzh.; BISNOVATYY, S.I.,  
inzh.; GALAYEVA, L.M., inzh.; GAL'PERIN, A.S., kand. tekhn. muk;  
GAL'CHENKO, I.I., inzh.; CONCHAR, I.S., kand. tekhn. nauk;  
DEGTYAREV, I.L., kand. tekhn. nauk; DUDYUSHKO, V.I., inzh.;  
YEMAKOV, I.N., inzh.; ZHOTKEVICH, T.S., inzh.; ZUSMANOVICH, G.G.,  
inzh.; KAZAKOV, V.K., inzh.; KOZLOV, A.M., inzh.; KOROLEV, N.A.,  
inzh.; KRIVENKO, P.M., kand. tekhn. nauk; LAFITSKIY, N.A., inzh.;  
LEFDEV, K.S., inzh.; LIBERMAN, A.R., inzh.; LIVSHIS, L.G., kand.  
tekhn. nauk; LOSEV, V.N., inzh.; LUKANOV, N.A., inzh.; LYUDCHIKO,  
A.P., inzh.; NAMELOV, A.N., kand. tekhn. nauk; MATVEYEV, V.A.,  
inzh.; ORANSKIY, N.N., inzh.; POLYACIENKO, A.V., kand. tekhn. nauk;  
POLOV, V.P., kand. tekhn. nauk; PUSTOVALOV, I.I., inzh.;  
PYTCHENKO, P.I., inzh.; PYATETSKIY, B.G., inzh.; RABOCHIY, L.G.,  
kand. tekhn. nauk; ROL'BIN, Ye.M., inzh.; SELIVANOV, A.I., doktor  
tekhn. nauk; SERENOV, V.M., inzh.; SKOLOKHOD, I.I., inzh.; SLAMODCHIKOV,  
V.I., inzh.; STORCHAK, I.U., inzh.; STRADYR'OV, F.Ya., kand. tekhn.  
nauk; SUKHINA, N.V., inzh.; TIMOFEEV, N.D., inzh.; FEDOSOV, I.M.,  
kand. tekhn. nauk; FILATOV, A.G., inzh.; KHODOV, L.T., inzh.;  
KHOMETSKIY, P.A., inzh.; TSVETKOV, V.S., inzh.; TSEYTLIN, B.Ye.,  
inzh.; SHARAGIN, A.N., inzh.; CHISTYAKOV, V.D., inzh.; BUD'KO, V.A.,  
red.; PESTYAKOV, A.I., red.; GOREVICH, M.M., tekhn. red.

(Continued on next card)

ATEM'YEV, Yu.N.-- (continued) Card 2.

[Manual on the repair of machinery and tractors] Spravochnik po remontu mashinno-traktornogo parka. Pod red. A.I.Selivanova. Moskva, Sel'khozizdat. Vols.1-2. 1962. (MIRA 15:6)  
(Agricultural machinery—Maintenance and repair)  
(Tractors—Maintenance and repair)

STRADYMOV, F.Ya.; DYADYUNIKO, V.P.; DVORNIKOV, A.

Wear resistance of the engine elements of the T-75 and  
MTZ-5MS high-speed tractors. Trakt. i sel'khozmash. 33 no.3:  
3-6 Mr '03. (MIRA 16:11)

1. Gosudarstvennyy vsesoyuznyy nauchno-issledovatel'skiy  
tekhnologicheskiy institut traktorov i sel'skokhozyayst-  
vennykh mashin.

STRADYMOV, P.K.

Determining technical and geological indices of the development of dissolved-gas pools in nonlinear gas flow in layers. Izv. vys. ucheb. zav.; neft' i gaz 2 no.8:31-38 '59. (MIRA 12:11)

1. Kuybyshovskiy industrial'nyy institut im. V.V. Kuybysheva.  
(Gas flow)

STRADYMOV, P.K.; SMIRNOV, V.N.

Movement of edge and bottom waters in gas pools in elastic  
drive. Izv. vys. ucheb. zav.; neft' i gaz 3 no.12:51-57  
'64, (MIRA 14:10)

1. Kuybyshevskiy industrial'nyy institut imeni V.V. Kuybysheva.  
(Gas, Natural)

STRADIMOV, P.K.

Form of a core of bottom oil (water) and its effect on the yield  
of gas wells. Izv. vys. ucheb. zav. neft' i gaz 4 no.8:9-  
73 '61. (MIRA 14:12)

1. Kuybyshevskiy industrial'nyy institut imeni V.V. Kuybysheva.  
(Gas wells)

STRADYMOV, P.K.

Comparison of the results of various methods of calculating from field data the fall of formation pressure in a gas well. Izv. vys. ucheb. zav.; neft' i gaz 4 no.11:35-39 '61. (MIRA 17:2)

1. Kuybyshevskiy industrial'nyy inatitut imeni V.V. Kuybysheva.

STRADYMOV, P.Z.; SMIRNOV, V.N.

Nonsteady movement of marginal and bottom waters in creating and  
exploiting underground gas reservoirs in water-bearing formations  
with an elastic drive. Izv. vys. ucheb. zav.: neft' i gaz 4 no.12  
(MIRA 16:12) 65-71 '61.

1. Kuybyshevskiy Industrial'nyy Institut imeni V.V.Kuybysheva.

STRADYMOV, P.K.

Storage of gas in gas pools under elastic conditions. Gas.  
pram. 7 nc. 9:42-46 '62. (MIRA 17:8)

STRADYMOV, P.K.

Approximate method for calculating the nonsteady flow of formation water in the storage of gas in water-bearing structures and depleted wells. Izv. vys. ucheb. zav.; neft' i gaz 6 no.4: 39-42 '63. (MIRA 16:7)

1. Kuybyshevskiy politekhnicheskiy institut imeni Kuybysheva.  
(Water, Underground)  
(Gas, Natural—Storage)

СТАЛИНГРАД.

Составлено в редакционной типографии. (С. В. Веснин, Г. А. Гусев, И. А. Григорьев)  
Печатано в тип. № 8 ЦК КПСС. 1958 г.  
(МСРФА 17-6)

1. Куйбышевский государственный институт имени Куйбышева.

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[REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]  
[REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]  
[REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]

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S. S. P. T., s. t. Works' no for the production and repair of fishing equipment  
and accessories. n. h. Vol. , no. 12, Dec. 1956.  
POLSKA RYBNA, Warszawa, Poland.

Source: East European Accessions List (EAL) Vol. 6, no. 1--April 1957

REVIEWED

REVIEWED

**PERIODICALS: VESTIS No. 1, 1958**

Agresti, A. Determine the solubility of nitroform in water by the help of polarimetry. In: *Vestis*, p. 113.

Monte Carlo Method for Nuclear Accessions (TRANSCA), Vol. 3, No. 3, September 1959, England.

STRADINS, J.

GENERAL

PERIODICALS: VESTIS, NO. 6, 1958

STRADINS, J. Theodor Grotthuss, outstanding Baltic physicochemist.  
In Russian. p. 135.

Monthly list of East European Accessions (EEAI) LC, VOL. 8, No. 2,  
February 1959, Unclass.

STRADINS, J.

GENERAL

PERIODICALS: VESTIS, NO. 8, 1958

STRADINS, J. An inter-Republic conference of Baltic scientists on  
the study of the history of natural sciences and medicine. In  
Russian . p. 153.

Monthly list of East European Accessions (EEAI) LC, VOL.8, No. 2  
February 1959, Unclass.

STRADINS, J.; Hillers, S.; Ratenbergs, N.

Dynamics of the secretion of some new nitrofuran preparation series from the organism; task and study method. In Russian. p. 107

LATVITAS PSR ZINATNU AKADEĢIJA. VESTIS. RIGA, LATVIA. NO. 3, 1959

Monthly List of East European Accessions. (EEAI) LC, Vol. 9, no. 2, Feb. 1960 Unclassified

STRADINS, J.

Second Interrepublic Conference on History in Baltic States. In Russian.  
p. 171.

LATVIJAS PSR ZINATNU AKADEMIJA. VESTIS. RIGA, LATVIA. No. 3, 1959  
Monthly List of East European Accessions. (EA) LC, Vol. 9, no. 2,  
Feb. 1960 Unclassified.

STRADYNYA, N. F. (Stradynya, N. F.) 190764, U.S.S.R.

Diagnostic use of a high-frequency field in the clinical aspects of endocrine diseases. Vop. Kur., fizioter. i lech. fiz. medit. 29 no.4: 362-363 JI-Ag '64. (MIRA 18-9)

L. Republikanskiy klinicheskaya bol'ničnyi Stradynya (Stradnyy) na 1. i 2. Sheferova str. Riga.

75-1-58/34

AUTHORS: Stradyn', Ya. P., Lepin', L. K.

TITLE: On the Polarographic Wave of Aluminum (O poljareograficheskoy volne olyuminija)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1956, Vol. 32, Nr 1, pp.196-200 (USSR)

ABSTRACT: In a letter to the editor's office the attempt is made to discuss the data about the polarographic peculiarities of aluminum. The discrepancies in the data on the potentials of the aluminum half wave according to different authors are shown: -1,70 V (reference 1), -1,63 V (reference 4), -1,76 V (reference 3), and it is attempted to illustrate these. It is shown that the depolarizing effect of  $\text{Al}^{3+}$ -ions is connected with the separation of hydrogen, but not with a reduction to the pure metal. In this case it must be considered that the aluminum wave is lagging behind the hydrogen wave of the strong acids, as well in the water medium, as in the ammonia medium, and that the amplitude at constant pH is rigorously proportional to the aluminum ion-concentration in the solution. Furthermore, it is shown that in the presence of  $\text{Al}^{3+}$  in an acid medium two hydrogen-reduction-waves occurs: a more positive, and a more negative one. It is shown that the occurrence of the aluminum wave may be brought into connection with the reduction of the

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75-1-30/52

On the Polarographic Wave of Aluminum

water molecule of the hydrate cover. There are 3 figures, and 17  
references, 3 of which are Slavic.

ASSOCIATION: Latvian State University, Riga  
(Latvijskiy gosudarstvennyy universitet, Riga)

SUBMITTED: November 9, 1956

AVAILABLE: Library of Congress

Card 2/2

STRADINS, Ya.P. (litga)

From the history of the first theories on the electric conductivity of solutions. Vop. ist. est. i tekhn. no. 9:120-122  
'59. (MIR 13:5)

(Electrolytes--Conductivity)

STRADIN', P.I. [deceased]; STRADIN', Ya.P.

Work on studying the history of science in Latvia. Vop.ist.  
est.i tekhn. no.8184-186 '59. (MIRA 13:5)  
(Latvia--Science)

STRADINS, Ya. [Stradins, J.] (Riga); VANAG, G. [Vanags, G.] (Riga)

Polarographic behavior of 2-nitroindandione-1,3. Vestis Latv ak  
no.11:79-86 '59.

(EEAI 9:11)

1. Akademiya nauk Latviyskoy SSR. Institut organicheskogo sinteza.  
(Nitroindandione)  
(Polarograph and polarography)

STRADYN' Ya. [Stradins, J.] (Riga); GILLER, S. [Hillers, S. (Riga); DZENE, A. (Riga)

Polarographic reduction of some derivatives of 5-nitrofuran,  
possessing chemotherapeutic activity. Vestis Latv ak no.12:71-78  
'59. (EKA 9:11)

1. Akademiya nauk Latviyskoy SSR, Institut organicheskogo sinteza.  
(Polarograph and polarography)  
(Nitrofuran)

5.4600  
5.3100

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5-(3)

AUTHORS: Stradin', Ya., Giller, S., Academician SOV/20-129-4-28/68  
AS LatvSSR, Tur'jik, Yu.TITLE: Polarographic Reduction of 2-Nitrofuran Derivatives and  
2-Nitroselenophene DerivativesPERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 4, pp 816 - 819  
(USSR)

ABSTRACT: The authors ascertained the influence exercised by the substituents in the 5th position of the furan- and selenophene cycle on the polarographic reduction process of the nitro groups in the second position. Thus, they completed the data of publications by new examples. The derivatives mentioned in the title may now be compared to the nitro derivatives of the aromatic series. Table 1 gives the derivatives I-XXV investigated in the present paper under vigorous conditions. It was found that the mechanism of polarographic reduction of the mentioned derivatives is the same as that of nitrobenzene- (Ref 7) and of 2-nitrothiophene (Ref 11) derivatives. Also the semwave potentials  $E_{1/2}$  of the nitro derivatives of the mentioned series are closely related. The comparison of these series leads to the conclusion that the nitro group of 2-nitrofuran derivatives is the most easily to be

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67764

Polarographic Reduction of 2-Nitrofuran Derivatives and SOV/20-129-4-28/68  
2-Nitroselenophene Derivatives

orientation found in the study of the reactivity of the substituted furans. However, further polarographic measurements are necessary in this case. The influence exercised by the substituents over an additional group -CH=CH- in the side chain is in general not high. The reduction of 5-nitro furfural proceeds in a characteristic manner (Scheme). There are 1 table and 16 references, 9 of which are Soviet.

ASSOCIATION: Institut organicheskogo sinteza Akademii nauk LatvSSR (Institute of Organic Synthesis of the Academy of Sciences of the Latvian SSR). Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: July 21, 1959

Card 3/3

"APPROVED FOR RELEASE: 08/26/2000

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... "A. J. ... - "plan and study of certain organic  
micro compounds." May, 1946. (RG 45-14567, 1-1, 143)

APPROVED FOR RELEASE: 08/26/2000

CIA-RDP86-00513R001653420009-1"

STRADYN', Ya. [Stradins, J.] (Riga)

Polarographic study of 5-substituted derivatives of 2-nitrofuran.  
Vestis Latv ak no.2:95-100 '60. (EEAI 10:1)

1. Akademiya nauk Latviyskoy SSR, Institut organicheskogo sinteza.  
(Nitrofuran)  
(Polarograph and polarography)

MAZHEIKA, I. [Mazeika, I.] (Riga); STRADYN', Ya. [Stradins, J.] (Riga)

Constant production control of analgin by the polarographic  
method. In Russian. Vestis Latv ak no.5:85-88 '60.  
(ERAI 10:7)

1. Akademiya nauk Latviyskoi SSR, Institut organicheskogo sinteza.  
(Dypyrone) (Polarograph and polarography)

STRADYN', Ya. [Stradins, J.]

The Third Inter Republic Conference on the History of Science  
in the Baltic States. In Russian. Vestis Latv ak no.5:189-192  
'60. (KRAI 10:7)  
(Baltic States—Science)

5.3610  
AUTHORS:

Neyland, O., Stradyn', Ya.  
Vanag, G.  
 Academician AS LatvSSR

6999

S/020/60/131/05/028/069  
 B011/B117

TITLE:

On the Structure of Some Cyclic 2-Nitro-diketones<sup>1,3</sup>

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 131, Nr 5, pp 1084-1087 (USSR)

TEXT: In continuation of their work on the tautomerism of the cyclic 2-nitro-diketones (Refs 1, 2), the authors studied 2-nitro-dimedone (I. R<sub>1</sub> = R<sub>2</sub> = CH<sub>3</sub>, see scheme), 2-nitro-5-phenyl cyclohexanone-1,3 (2-nitrophenedione (I. R<sub>1</sub> = R<sub>2</sub> = C<sub>6</sub>H<sub>5</sub>), their anions, and some related compounds. The structures of the products mentioned as well as the difference between the melting point 120-121°, 131-132° between the three nitration products of phenedione (melting point 120-121°, 131-132° between the structures of the were taken in suspension in paraffin oil and in chloroform solutions. The ultra-violet spectra of 10<sup>-4</sup> M aqueous solutions in H<sub>2</sub>O, CH<sub>3</sub>OH, or CHCl<sub>3</sub> were taken. Polarograms of 10<sup>-4</sup> M aqueous solutions of the corresponding substances in buffer 0.1 N KCl. Table 1 shows the compilation of the results. From these, it follows that the 2-nitro-dimedone and the 2-nitrophenedione in chloroform show an analogous

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On the Structure of Some Cyclic 2-Nitro-diketones-<sup>1,3</sup> S/020/60/131/05/028/069  
B011/B117

structure, i.e. that of a nitro-enol in which a stable intramolecular hydrogen bond has been established for the hydroxyl group. The analogous structure of the molecules of 2-nitro-dimedone and 2-nitrophenedione in chloroform is proved by the similarity of their ultraviolet spectra. The infrared spectrum of solid 2-nitro-dimedone differs considerably from its spectrum in chloroform. Hence, it follows that 2-nitro-dimedone in the solid state exists also in the form of a nitro-enol. In this case, however, not the intramolecular, but the intermolecular interaction of the groups prevails. On the other hand, the infrared spectra of solid 2-nitrophenedione give evidence of the facts that: 1) both modifications with melting points of 131-132° and 120-121° have an analogous structure, and 2) that the structure resembles in this case the state found in a CHCl<sub>3</sub> solution. This means that this structure forms a nitro-enol with an intramolecular hydrogen bond, though an intermolecular interaction can take place in this case also. The third modification of the 2-nitrophenedione (melting point 119-120°) has a quite different structure. The authors came to the conclusion that this modification corresponds to the 6-nitro-3-phenyl hexanoic-5-acid (IV). This acid forms when 2-nitrophenedione is boiled in aqueous solutions whereby its ring is easily split. From the infra-red spectra of the solid ammonium salts of the 2-nitro-dimedone and the 2-nitrophenedione, the authors

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6999

On the Structure of Some Cyclic 2-Nitro-diketones-1,3    S/020/60/131/05/028/069  
B011/B117

conclude that a mesomeric anion (II) with the charge distributed between two carbonyl groups and the nitro group must exist. It seems that the electron density is unevenly distributed in the mesomeric 2-nitro-enolate anions. 2-Nitro-dimedone and 2-nitrophenedione on the one and 2-nitro-indandione-1,3 on the other hand have an entirely different structure. The two first-mentioned ones are in the solid state nitro-enols, while the latter exists as a nitro-diketone or as an ionized nitro-acid. This and other structural differences can be explained, if it is borne in mind that the 2-nitro-dimedone and the 2-nitrophenedione have a stable six-membered ring, while there is a higher-stressed five-membered ring in the 2-nitro-indandione-1,3. In the latter, endocyclic double bonds are less advantageous than the exocyclic ones (Ref 2). Therefore, the tendency of the 2-nitro-indandione-1,3 is to form a type of a keto-nitro-acid, while, in the case of the six-membered nitro- $\beta$ -diketones, the formation of a nitro-enol is possible. A. Grinvalde and M. Tiltin' are mentioned. There are 1 table and 14 references, of which are Soviet. 4

ASSOCIATION: Institut organicheskogo sinteza Akademii nauk LatvSSR (Institute of Organic Synthesis of the Academy of Sciences, Latviyskaya SSR).  
Rizhskiy politekhnicheskiy institut (Riga Polytechnic Institute)

SUBMITTED: November 23, 1959  
Card 3/3

ZHABAT, R.; SIRI-LIK', Ya.; GRINVALDS, A.; VAIKOV, G., akademik

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Product of electrolytic reduction of 2-nitroindandione-1,3 and 2-  
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(Nitroindandione) (Oximes) (Indandione)

ELYUGER, A.F.; STRADYN', Ya.P.; DZENE, A.Ya.; TILTYN', M.B.

Data on the experimental basis for the clinical use of nitrofurans  
with properties of wide-spectrum antibiotics. Urologia no.5:52-  
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STRADYN', Ya.[Stradins, J.]; VALESKALN, P.[Valeskalns, P.]

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Experimental study of furazolin (F-150), a new preparation of the  
nitrofuran series. Zhur.mikrobiol., epid. i fiziol. 32 no.10:  
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ist.est.i tekh. 39:49-65 '62. (MIRA 16:2)  
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CIA-RDP86-00513R001653420009-1

STRADYN', Ya. P.; TUTANS, I.; VAKAG, G. Yu.

"Polarographic investigations of indandione-1, 3 and related compounds."

report submitted for 3rd Intl Polarography Cong, Southampton, 19-25 Jul 64.

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CIA-RDP86-00513R001653420009-1"

L 56000-65 EMT(d)/EWP(v)/REC-4/T/EWP(k)/EWP(h)/BED-2/EWP(1) Pg-4/Pf-4/Pg-4/  
PK-A TJP(c) BB/GG

ACCESSION NR: AR5014014

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62-506(047)

46  
B

SOURCE: Ref. zh. Kibernetika. Svodnyy tom, Abs. 4G9

AUTHOR: Kovalev, G. N.; Rastrigin, L. A.; Stradyn', Ya. P.

TITLE: Some problems in chemical cybernetics 160

CITED SOURCE: Izv. AN LatvSSR. Ser. fiz. i tekhn. n., no. 3, 1964, 103-119

TOPIC TAGS: chemical process characteristic, automatic process control, regulation  
problem equation

TRANSLATION: The report evaluates the characteristics of chemical processes, i.e. complexity, lack of adequate mathematical description, multicomponent character, high noise factor, difficulty of observation, nearly total lack of adequately reliable chemical sensors, and great inertia. A basic plan is drawn for automatic and semiautomatic control of chemical processes. The control problem is formulated mathematically. Ztbl. with 47 titles; 5 illustrations. B. G.

SUB CODE: IE, GC

ENCL: 00

Cord 1/1

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Polarography and present-day science. Prizdela 53 no.9.  
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MAN, J. A. (Fleming, James Bond), alias (Stratford, George Smith),  
alias (James Bond), alias (Stratford, George Smith)

• Instrumental preparation of four radical actions in the S-  
-C- program series. Dated: AN 313, 19-11-1944-1945. AG 104.  
(CIA 104)

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[Linnbergs, J.]; VANAG, G. [Vanags, G.]

Protolysis of substituted derivatives of 2-benzyl-1,3-indandione  
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Single-electron polarographic reduction of 2-nitrofuran and its derivatives  
in water-alcohol media. Elektrokhimiika 1 no.81953-961 Ag 165. (MIRA 1819)

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CIA-RDP86-00513R001653420009-1"

1. Institut ceskoslovenských věd (Institute of Czechoslovak Sciences),  
Prague, Czechoslovakia.

2. Institute of the behavior of Subatomic Particles, Ministry of Education,  
Prague, Czechoslovakia. (CIA 12:6)

3. Institut ceskoslovenských věd (Institute of Czechoslovak Sciences),  
Prague, Czechoslovakia.

UDC 547.555'12.4'.01 RMAN, I. P.; MUSKINOV, V. A.  
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Cleavage of a C-N bond in the polarographic reduction of diazonium  
1,1-substitutedes. Zhur. ob. khim. 35 no.8:1307-1312. Ag. 1965.  
(MIRA 18.8)

I. Institut organicheskogo sinteza AN latvийской SSR i Rukovod  
prilezhecheskly institut.

1. [REDACTED] (SECRET) (NOFORN)

2. Soviet military technical break-in  
intelligence, 1950-1954. (SECRET) (NOFORN)  
[REDACTED] (SECRET)

3. Soviet espionage system W (Soviet R. & D. Intelligency  
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L 14039-66 EWF(j)/EWT(m) EM

ACC NR: AR5020051

SOURCE CODE: UR/0031/65/000/012/N006/N007

AUTHOR: Teraud, V.V.; Stradyn', Ya.P.; Shimanskaya, M.V.

ORG: none

TITLE: Polarographic control methods in the production of maleic acid from furfural

SOURCE: Ref. zh. Khimiya, Abs. 12N35

REF SOURCE: Izv. Akad LatvSSR. Ser. Khim., no. 5, 1964, 541-546

TOPIC TAGS: maleic anhydride, polarography, catalysis, surface active agent

TRANSLATION: Polarographic methods were developed for analytical control of the separate stages of the vapor-phase contact process in oxidizing furfural into maleic anhydride. In order to analyze the maleic acid in catalysts with a high content of surface-active agents, a modified method for the addition of standard solutions retaining the permanent concentration of the agents was proposed. This allows elimination of the influence of surface-active agents on the polarographic determination of maleic acid. Because the polarographic method is sufficiently accurate for industrial use, it is proposed that it be substituted for the more labor consuming chemical methods for controlling the process. From a resume.

SUB CODE: 07

Card 1/1

2

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(deceased)

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prin. 1965, 11:1239-1247. 165 (MIR - 1971)

L. Institut organicheskogo sinteza AN Latvийской ССР, Рига.  
Submitted December 10, 1964.